



SEQUENCE LISTING

<110> Takeda Pharmaceutical Company Limited
NAKANISHI, Atsushi
HIKICHI, Yukiko
UNO, Yumiko

<120> Novel Protein and DNA Thereof

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<140> 10/506,308

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Leu Gln Lys Pro Gln Glu Pro Gln Lys Ser Pro Glu Pro Ser Leu Pro
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Ser Ala Pro Pro Asn Val Ser Glu Glu Lys Leu Arg Ser Leu Ser Leu
65 70 75 80
Ser Glu Phe Glu Glu Gly Ser Tyr Gly Trp Arg Asn Phe His Pro Gln
85 90 95
Cys Leu Gln Arg Cys Asn Thr Pro Gly Gly Phe Leu Leu His Tyr Cys
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Leu Leu Ala Val Thr Gln Gly Ile Val Val Asn Gly Leu Val Asn Ile
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Gly Leu Ile Ser Ser Ser Tyr Asp Ile Ser Phe Cys Leu Leu Ser Leu
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Cys Val Thr Thr Arg Asn Ser Thr Ser Cys Thr Ser Thr Ser Ser
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Leu Ser Asn Tyr Leu Tyr Val Phe Ile Leu Gly Gln Leu Leu Leu Gly
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Ala Gly Gly Thr Pro Leu Tyr Thr Leu Gly Thr Ala Phe Leu Asp Asp
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| Ser | Ser | Phe | 420 | Ala | Thr | Leu | Gly | 425 | Ala | Val | Leu | Ile | 430 | Pro | Gly |
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| Leu | Gly | Thr | 625 | Ile | Pro | Gly | Pro | 630 | Ile | Ile | Phe | Gly | 635 | Phe | Thr |
| Thr | Cys | Ile | 645 | Leu | Trp | Asp | Ile | 650 | Asn | Asp | Cys | Gly | 655 | Ile | Lys |
| Trp | Ile | Tyr | 660 | Asp | Asn | Ile | Lys | 665 | Met | Ala | His | Met | 670 | Leu | Val |
| Val | Thr | Cys | 675 | Lys | Val | Ile | Thr | 680 | Met | Phe | Phe | Asn | 685 | Gly | Phe |
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| <213> Homo sapiens | |
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| tgtctccagc | gctgcaacac | acctggaggc | tttctgcttc | actactgcct | cttggccgctc | 180 |
| acgcaaggta | ttgtagttaa | tgccctagta | aatattagca | tttccactgt | tgagaagcgt | 240 |
| tatgaaatga | agagttccct | gactggcctg | atttcatcaa | gctacgatat | ttcattctgt | 300 |
| ttgttgtctt | tatttgatc | attctttggt | gaaagaggac | ataagccgag | atggcttgca | 360 |
| tttgacgctt | ttatgattgg | actgggagca | cttgattctt | cattgccaca | atttttcagt | 420 |
| ggagaatata | aattgggggtc | tctttttgaa | gacacttggt | taacaacaag | gaatagcacc | 480 |
| agttgtacat | cttcaacttc | ttcactttct | aactacttgt | atgtcttcat | cttgggacaa | 540 |
| ctattgctgg | gggcaggagg | aactcctctt | tatactctgg | gaacagcctt | tcttgatgat | 600 |
| tctgtgccc | cacacaagtc | ttctctctat | ataggaaccg | gttatgctat | gtcaatctta | 660 |
| ggccctgcta | ttggctatgt | attgggagga | caactgctaa | ccatatacat | tgatgttgct | 720 |
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| agggcggtggc | ggagagtgcg | ctggaggctg | gagggccagg | agggcggaag | cttcccgcac | 120 |
| gggggcgctg | tcacctgcct | gtgggaggag | ccagagaggg | acctggctct | gctgctctga | 180 |
| agcaccggag | tcgggagaac | ccatccagac | atgaagagcg | ccaaagggtat | tgagaacttg | 240 |
| gcttttgtcc | cctccagccc | agacatcctg | cgccgcttgt | ctgcgtcgcc | ctcccaaadc | 300 |
| gaagtctctg | ccttgctctc | tgacccccaa | agagagaatt | ctcagccaca | ggagcttcag | 360 |
| aagccccagg | agccccagaa | gtcaccagag | ccatctctgc | cttcagcccc | tcccaatgtc | 420 |
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| aggaaaacag | aaataacatc | cactgcagaa | acttttggtt | ttgaagctaa | agctggaaaa | 240 |
| tgtgaaactc | attgtgcgaa | actgcccata | ttcctttgca | ttttctttat | tgtaattatt | 300 |
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| caacgggtccc | tagccttggg | aatacaattt | atgggtcctc | gattattagg | aacaattcct | 420 |
| ggaccaatta | tatttggttt | cacaatagac | agcacatgta | ttctttggga | tataaatgat | 480 |
| tgtggaatta | aaggagcttg | ctggatttat | gataacatca | agatggccca | tatgctagta | 540 |
| gccataagtg | ttacttgtaa | agttatcacc | atgttcttca | atggatttgc | aatctttttg | 600 |
| tataaaccac | ctccatcagc | cacagatgtg | tcatttccata | aagagaatgc | agttgtgact | 660 |
| aatgttttag | cagaacagga | tctcaacaaa | atagtaaaaag | aagggtgaaa | tgggaaaaga | 720 |
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| aattctcagc | cacaggagct | tcagaagccc | caggagcccc | agaagtcacc | cgagccatct | 240 |
| ctgccttcag | cccctcccaa | tgtctccgaa | gagaagctcc | ggtcactgtc | gctgtccgag | 300 |
| tttgaggagg | ggtcttacgg | ctggaggaac | ttccatcctc | aatgtctcca | gcgctgcaac | 360 |
| acacctggag | gctttctgtc | tcactactgc | ctcttggccg | tcacgcaagg | tattgtagtt | 420 |

| | | | | | | | | | | | | | | | |
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| Tyr | Val | Phe | Val | Leu | Gly | Gln | Leu | Leu | Leu | Gly | Thr | Gly | Gly | Thr | Pro |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Leu | Tyr | Thr | Leu | Gly | Thr | Ala | Phe | Ile | Asp | Asp | Ser | Val | Pro | Thr | His |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Lys | Ser | Ser | Leu | Tyr | Ile | Gly | Ile | Gly | Tyr | Ser | Met | Ser | Ile | Leu | Gly |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Pro | Ala | Ile | Gly | Tyr | Val | Leu | Gly | Gln | Leu | Leu | Thr | Met | Tyr | Ile | |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Asp | Ile | Ala | Met | Gly | Gln | Ser | Ser | Asp | Leu | Thr | Glu | Asp | Asp | Pro | Arg |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Trp | Leu | Gly | Ala | Trp | Trp | Ile | Gly | Phe | Leu | Leu | Ala | Trp | Leu | Phe | Ala |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Trp | Ser | Leu | Ile | Met | Pro | Phe | Ser | Cys | Phe | Pro | Lys | His | Leu | Pro | Gly |
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| | | | 340 | | | | | 345 | | | | | 350 | | |
| Ser | Thr | Ser | Phe | Gln | His | Thr | Asp | Glu | Asn | Phe | Gly | Lys | Ser | Ile | Lys |
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| Asp | Phe | Pro | Thr | Ala | Val | Lys | Asn | Leu | Met | Arg | Asn | Thr | Val | Phe | Ile |
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| Cys | Leu | Val | Leu | Ser | Thr | Thr | Ser | Glu | Ala | Leu | Ile | Thr | Thr | Gly | Phe |
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| | | | 420 | | | | | 425 | | | | | 430 | | |
| Leu | Gly | Gln | Ile | Leu | Gly | Gly | Val | Leu | Val | Ser | Lys | Phe | Lys | Met | Lys |
| | | 435 | | | | 440 | | | | | | 445 | | | |
| Cys | Lys | Asn | Thr | Met | Lys | Phe | Ala | Leu | Cys | Thr | Ser | Gly | Val | Ala | Leu |
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| | | | 500 | | | | | 505 | | | | | 510 | | |
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| Cys | Ser | Cys | Ile | Glu | Arg | Lys | Ile | Thr | Ser | Thr | Ala | Glu | Ser | Thr | Asp |
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| Phe | Glu | Ala | Lys | Ala | Gly | Lys | Cys | Arg | Thr | Arg | Cys | Ser | Asn | Leu | Pro |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Ile | Phe | Leu | Gly | Ile | Phe | Phe | Ile | Thr | Val | Ile | Phe | Thr | Phe | Met | Ala |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Gly | Thr | Pro | Ile | Thr | Val | Ser | Ile | Leu | Arg | Cys | Val | Asn | His | Arg | His |
| | | 595 | | | | 600 | | | | | | 605 | | | |
| Arg | Ser | Leu | Ala | Leu | Gly | Val | Gln | Phe | Met | Leu | Leu | Arg | Leu | Leu | Gly |
| | 610 | | | | 615 | | | | | 620 | | | | | |
| Thr | Ile | Pro | Gly | Pro | Ile | Phe | Gly | Val | Ile | Ile | Asp | Ser | Thr | Cys | |
| 625 | | | | | 630 | | | | 635 | | | | | 640 | |
| Val | Leu | Trp | Asp | Val | Asn | Glu | Cys | Gly | Ile | Lys | Gly | Ala | Cys | Trp | Ile |
| | | | | 645 | | | | | 650 | | | | | 655 | |
| Tyr | Asp | Asn | Ile | Lys | Met | Ala | His | Met | Leu | Val | Ala | Ile | Ser | Val | Thr |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Cys | Lys | Val | Ile | Thr | Ile | Phe | Phe | Asn | Gly | Leu | Ala | Ile | Val | Leu | Tyr |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Lys | Pro | Pro | Pro | Pro | Gly | Thr | Glu | Val | Ser | Phe | Gln | Ser | Gln | Asn | Val |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Ile | Val | Ser | Thr | Ile | Ser | Val | Glu | Glu | Asp | Leu | Asp | Lys | Ala | Glu | Asn |
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| Ser | Glu | Asp | Pro | Gln | Lys | Ser | Thr | Glu | Pro | Ser | Pro | Pro | Ser | Ser | Thr |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Leu | Pro | Ala | Ser | Asp | Glu | Pro | Pro | Gly | Ser | Gln | Leu | Ser | Glu | Leu | Glu |
| | 65 | | | | 70 | | | | | 75 | | | | | 80 |
| Glu | Gly | Pro | Cys | Gly | Trp | Arg | Asn | Phe | His | Pro | Gln | Cys | Leu | Gln | Arg |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Cys | Asn | Asn | Pro | Lys | Gly | Phe | Leu | Leu | His | Tyr | Cys | Leu | Leu | Ala | Leu |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Thr | Gln | Gly | Ile | Val | Val | Asn | Gly | Leu | Val | Asn | Ile | Ser | Ile | Ser | Thr |
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| Phe | Gly | Glu | Arg | Gly | His | Lys | Pro | Arg | Trp | Leu | Ala | Phe | Ala | Ser | Phe |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Met | Ile | Gly | Leu | Gly | Ala | Leu | Val | Phe | Ser | Leu | Pro | His | Phe | Phe | Ser |
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| Gly | Arg | Tyr | Glu | Leu | Gly | Thr | Ile | Phe | Glu | Asp | Thr | Cys | Leu | Thr | Arg |
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| Tyr | Val | Phe | Val | Leu | Gly | Gln | Leu | Leu | Leu | Gly | Thr | Gly | Gly | Thr | Pro |
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| Leu | Tyr | Thr | Leu | Gly | Thr | Ala | Phe | Ile | Asp | Asp | Ser | Val | Pro | Thr | His |
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| Pro | Ala | Ile | Gly | Tyr | Val | Leu | Gly | Gly | Gln | Leu | Leu | Thr | Met | Tyr | Ile |
| | | 275 | | | | | 280 | | | | | 285 | | | |
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| Ser | Ile | Ala | Ala | Thr | Leu | Gly | Gly | Ala | Val | Leu | Ile | Pro | Gly | Ala | Ala |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Leu | Gly | Gln | Ile | Leu | Gly | Gly | Val | Leu | Val | Ser | Lys | Phe | Lys | Met | Lys |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Cys | Lys | Asn | Thr | Met | Lys | Phe | Ala | Leu | Cys | Thr | Ser | Gly | Val | Ala | Leu |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Met | Leu | Ser | Phe | Val | Phe | Ile | Tyr | Ala | Lys | Cys | Glu | Asn | Gly | Pro | Phe |
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| | | | | 485 | | | | | 490 | | | | | 495 | |
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|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Met | Gln | Gly | Ser | Lys ₅ | Gly | Val | Glu | Asn | Pro ₁₀ | Ala | Phe | Val | Pro | Ser ₁₅ | Ser |
| Pro | Asp | Thr | Pro ₂₀ | Arg | Arg | Ala | Ser | Ala ₂₅ | Ser | Pro | Ser | Gln | Val ₃₀ | Glu | Val |
| Ser | Ala | Val ₃₅ | Ala | Ser | Arg | Asn | Gln ₄₀ | Asn | Gly | Gly | Ser | Gln ₄₅ | Pro | Arg | Asp |
| Ser | Glu ₅₀ | Asp | Pro | Gln | Lys | Ser ₅₅ | Thr | Glu | Pro | Ser | Pro ₆₀ | Pro | Ser | Ser | Thr |
| Leu ₆₅ | Pro | Ala | Ser | Asp | Glu ₇₀ | Pro | Pro | Gly | Ser | Gln ₇₅ | Leu | Arg | Glu | Leu | Glu ₈₀ |
| Glu | Gly | Pro | Cys | Gly ₈₅ | Trp | Arg | Asn | Phe | His ₉₀ | Pro | Gln | Cys | Leu | Gln ₉₅ | Arg |
| Cys | Asn | Asn | Pro ₁₀₀ | Lys | Gly | Phe | Leu | Leu ₁₀₅ | His | Tyr | Cys | Leu | Leu ₁₁₀ | Ala | Leu |
| Thr | Gln | Gly ₁₁₅ | Ile | Val | Val | Asn | Gly ₁₂₀ | Leu | Val | Asn | Ile | Ser ₁₂₅ | Ile | Ser | Thr |
| Ile | Glu ₁₃₀ | Lys | Arg | Tyr | Glu | Met ₁₃₅ | Lys | Ser | Ser | Leu | Thr ₁₄₀ | Gly | Leu | Ile | Ser |
| Ser ₁₄₅ | Ser | Tyr | Asp | Ile | Ser ₁₅₀ | Phe | Cys | Val | Leu | Ser ₁₅₅ | Leu | Phe | Val | Ser | Phe ₁₆₀ |
| Phe | Gly | Glu | Arg | Gly ₁₆₅ | His | Lys | Pro | Arg | Trp ₁₇₀ | Leu | Ala | Phe | Ala | Ser ₁₇₅ | Phe |
| Met | Ile | Gly | Leu ₁₈₀ | Gly | Ala | Leu | Val | Phe ₁₈₅ | Ser | Leu | Pro | His | Phe ₁₉₀ | Phe | Ser |
| Gly | Arg | Tyr ₁₉₅ | Glu | Leu | Gly | Thr | Ile ₂₀₀ | Phe | Glu | Asp | Thr | Cys ₂₀₅ | Leu | Thr | Arg |
| Asn | Ser ₂₁₀ | Thr | Arg | Cys | Ala | Ser ₂₁₅ | Ser | Thr | Ser | Leu | Leu ₂₂₀ | Ser | Asn | Tyr | Phe |
| Tyr ₂₂₅ | Val | Phe | Val | Leu | Gly ₂₃₀ | Gln | Leu | Leu | Leu | Gly ₂₃₅ | Thr | Gly | Gly | Thr | Pro ₂₄₀ |
| Leu | Tyr | Thr | Leu | Gly ₂₄₅ | Thr | Ala | Phe | Ile | Asp ₂₅₀ | Asp | Ser | Val | Pro | Thr ₂₅₅ | His |
| Lys | Ser | Ser | Leu ₂₆₀ | Tyr | Ile | Gly | Ile | Gly ₂₆₅ | Tyr | Ser | Met | Ser | Ile ₂₇₀ | Leu | Gly |
| Pro | Ala | Ile ₂₇₅ | Gly | Tyr | Val | Leu | Gly ₂₈₀ | Gly | Gln | Leu | Leu | Thr ₂₈₅ | Met | Tyr | Ile |
| Asp | Val ₂₉₀ | Ala | Met | Gly | Gln | Ser ₂₉₅ | Ser | Asp | Leu | Thr | Glu ₃₀₀ | Asp | Asp | Pro | Arg |
| Trp ₃₀₅ | Leu | Gly | Ala | Trp | Trp ₃₁₀ | Ile | Gly | Phe | Leu | Leu ₃₁₅ | Ala | Trp | Leu | Phe | Ala ₃₂₀ |
| Trp | Ser | Leu | Ile | Met ₃₂₅ | Pro | Phe | Ser | Cys | Phe ₃₃₀ | Pro | Lys | His | Leu | Pro ₃₃₅ | Gly |
| Thr | Ala | Lys | Ile ₃₄₀ | Gln | Ala | Gly | Lys | Thr ₃₄₅ | Ser | Gln | Thr | His | Gln ₃₅₀ | Asn | Asn |
| Ser | Thr | Ser ₃₅₅ | Phe | Gln | His | Met | Asp ₃₆₀ | Glu | Asn | Phe | Gly | Lys ₃₆₅ | Ser | Ile | Lys |
| Asp | Phe ₃₇₀ | Pro | Thr | Ala | Val | Lys ₃₇₅ | Asn | Leu | Met | Arg | Asn ₃₈₀ | Thr | Val | Phe | Ile |
| Cys ₃₈₅ | Leu | Val | Leu | Ser | Thr ₃₉₀ | Thr | Ser | Glu | Ala | Leu ₃₉₅ | Val | Thr | Thr | Gly | Phe ₄₀₀ |
| Ala | Thr | Phe | Leu | Pro ₄₀₅ | Lys | Phe | Ile | Glu | Asn ₄₁₀ | Gln | Phe | Gly | Leu | Thr ₄₁₅ | Ser |
| Ser | Phe | Ala | Ala ₄₂₀ | Thr | Leu | Gly | Gly | Ala ₄₂₅ | Val | Leu | Ile | Pro | Gly ₄₃₀ | Ala | Ala |

Leu Gly Gln Ile Leu Gly Gly Val Leu Val Ser Lys Phe Lys Met Lys
 435 440 445
 Cys Lys Asn Thr Met Lys Phe Ala Leu Cys Thr Ser Gly Val Ala Leu
 450 455 460
 Met Leu Ser Phe Val Phe Ile Tyr Ala Lys Cys Glu Asn Gly Pro Phe
 465 470 475 480
 Ala Gly Val Ser Glu Ser Tyr Asn Gly Thr Gly Glu Met Gly Asn Leu
 485 490 495
 Thr Ala Pro Cys Asn Ala Asn Cys Asn Cys Leu Arg Ser Tyr Tyr Tyr
 500 505 510
 Pro Leu Cys Gly Ser Asp Gly Val Gln Tyr Phe Ser Pro Cys Phe Ala
 515 520 525
 Gly Cys Leu Asn Ser Val Ser Asn Arg Lys Pro Lys Ala Tyr Tyr Asn
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 Cys Ser Cys Ile Glu Arg Lys Val Asp Ile Thr Ser Thr Ala Glu Ser
 545 550 555 560
 Pro Asp Phe Glu Ala Arg Ala Gly Lys Cys Lys Thr Gln Cys Ser Asn
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 Leu Pro Ile Phe Leu Gly Ile Phe Phe Ile Thr Val Ile Phe Thr Phe
 580 585 590
 Met Ala Gly Thr Pro Ile Thr Val Ser Ile Leu Arg Cys Val Asn His
 595 600 605
 Arg Gln Arg Ser Leu Ala Leu Gly Val Gln Phe Met Leu Leu Arg Leu
 610 615 620
 Leu Gly Thr Ile Pro Gly Pro Ile Ile Phe Gly Val Thr Ile Asp Ser
 625 630 635 640
 Thr Cys Val Leu Trp Asp Ile Asn Glu Cys Gly Thr Lys Gly Ala Cys
 645 650 655
 Trp Ile Tyr Asp Asn Ile Arg Met Ala His Met Leu Val Ala Ile Ser
 660 665 670
 Val Thr Cys Lys Val Ile Thr Ile Phe Phe Asn Gly Leu Ala Ile Val
 675 680 685
 Leu Tyr Lys Pro Pro Pro Pro Gly Thr Glu Val Ser Phe Gln Ser Gln
 690 695 700
 Asn Val Val Val Ser Thr Ile Thr Val Glu Glu Asp Leu Asn Lys Ile
 705 710 715 720
 Glu Asn Glu Gly

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 <213> Rattus norvegicus

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 aatggggggt cgcaacctcg ggattctgaa gatccccaga agtcaactga gccatctcct 180
 ctttcttcga ctctcccagc ttctgatgag ccgcccgggt cacagctaag agagcttgag 240
 gagggacctt gcgggtggag gaacttcac cccagtgctc ttcagcgctg caacaacccc 300
 aaagggtttt tgcttacta ctgtctctta gccctaacgc aagggtattgt agtaaattggc 360
 ctagtaaata ttagcatttc caccatcgag aagcgctatg aaatgaagag ttccctgacc 420
 ggcctgatata catcgagcta cgacatctcc ttttgcgtgt tgtctctggt tgtgtctttc 480
 tttggtgaga gaggacacaa acctcgctgg cttgcctttg catcctttat gatcggactg 540
 ggagcgctgg tgttttcttt accacacttc ttcagtggga gatatgaact gggaaccatt 600
 ttcgaagata cctgcttaac aaggaacagc accagatgtg cttcttcaac ctctctgctt 660
 tctaactact tctatgtctt tgtcctggga caactgttgc tggggactgg aggaactccg 720
 ctctacaccc tgggaacggc cttcattgat gactctgtac ccacacacaa atcttctcta 780
 tatatcggtat ttggctattc tatgtcaatc ctaggcccag ccattggcta tgtgttggga 840
 ggacagctgt tgacaatgta cattgatgtt gctatgggac aaagttcaga tctgactgag 900
 gatgatcccc ggttgggtggg atttggattcc ttttagcttg gctctttgct 960
 tggctcttga taatgccttt ctctgtttt ccaaagcatt taccagggac agcaaaaatt 1020
 caagctggca aaacttccca gactcatcaa aataatagta cttccttcca acatatggat 1080
 gaaaattttt ggaaaagtat taaagatttt ccaactgctg tgaagaattt gatgaggaat 1140
 acagtcctta tatgtttagt tctatcaact acttctgaag cactagttac cacgggattt 1200

| | | | | | | |
|------------|------------|------------|------------|-------------|--------------|------|
| gccacgtttt | tacctaaatt | tatagaaaat | caatttggat | tgacatcgag | ctttgcggca | 1260 |
| acacttggag | gggctgtttt | aattcctgga | gctgtctctg | gtcaaattctt | agggtgggtgtt | 1320 |
| cttgtttcaa | aattcaaaat | gaagtgtaaa | aatacaatga | agtttgcgtt | atgtacatct | 1380 |
| ggagtagcac | ttatgctgag | ttttgtattt | atztatgcaa | aatgtgaaaa | tgggccattt | 1440 |
| gctggtgtgt | ctgaatcata | taatggaaca | ggagagatgg | ggaatctgac | tgacacctgc | 1500 |
| aatgccaatt | gcaattgttt | gagatcctat | tattaccgcg | tctgtggaag | tgatggagtc | 1560 |
| cagtattttt | ctccctgctt | tgcaggttgt | ttaaactcag | tttcaaacag | gaaaccaaag | 1620 |
| gcatattata | attgttcctg | tattgaaagg | aaagtcgaca | tcacttctac | tcagagaaagc | 1680 |
| cctgattttg | aagcaagggc | tggaaaatgt | aaaactcagt | gttcaaacct | gccccatattt | 1740 |
| ctcggcatct | tcttcacac | tgtgattttt | acctttatgg | caggtagccc | cataactgtg | 1800 |
| tccatattaa | ggtgtgtcaa | tcacagacag | cgatctctag | cactgggagt | gcagttcatg | 1860 |
| cttcttcggt | tgtaggcac | gatacctggg | ccaattatat | ttggcgctac | aatagacagc | 1920 |
| acgtgtgttc | tgtgggacat | caatgaatgt | ggaacaaagg | gggctgtgtg | gatctatgat | 1980 |
| aacatcagga | tggcgcatat | gctggtggct | ataagtgtta | cttgtaaagt | catcaccata | 2040 |
| ttcttcaatg | gacttgcgat | agttctctat | aaaccaccgc | ccccaggaac | ggagggtatca | 2100 |
| tttcaaagtc | agaatgtagt | tgtgtcgacg | attacagtgg | aggaggacct | caacaaaata | 2160 |
| gagaacgaag | ga | | | | | 2172 |

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<220>
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 tcaactgagc catccccgcc ttctt 25

<210> 57
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<220>
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<210> 58
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<210> 59
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 <212> DNA
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<220>
 <223> Primer

<400> 59
 acaaacagag acaacacgca aaaggagatg 30

<210> 60
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| <223> Primer | |
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| atcggactgg gagcgctggt gtttt | 25 |
| <210> 61 | |
| <211> 30 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Primer | |
| <400> 61 | |
| tattattacc cactctgtgg aagtgatgga | 30 |
| <210> 62 | |
| <211> 26 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Primer | |
| <400> 62 | |
| ctttcttgac catgcagggt tccaag | 26 |
| <210> 63 | |
| <211> 26 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Primer | |
| <400> 63 | |
| atcctcttct ttctcctcct tcgttc | 26 |
| <210> 64 | |
| <211> 27 | |
| <212> DNA | |
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| <220> | |
| <223> Primer | |
| <400> 64 | |
| atgcagggtt ccaaggaggt cgagaac | 27 |
| <210> 65 | |
| <211> 28 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Primer | |
| <400> 65 | |
| tcctccttcg ttctctatct tggtgagg | 28 |

<210> 66
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<212> DNA
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<220>
<223> Primer

<400> 66
taatacgact cactataggg 20

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<400> 67
catacgattt aggtgacact atag 24

<210> 68
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<220>
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<400> 68
atcgagaagc gctatgaaat gaaga 25

<210> 69
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<212> DNA
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<220>
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<400> 69
agcgctccca gtccgatc 18

<210> 70
<211> 23
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<400> 70
tttggtgaga gaggacacaa acc 23

<210> 71
<211> 28
<212> DNA
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<220>
<223> Primer

<400> 71

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| ggactgggag cgctggtgtt ttctttac | 28 |
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| <211> 21 | |
| <212> DNA | |
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| <220> | |
| <223> Primer | |
| <400> 72 | |
| cccagggtgt agagcggagt t | 21 |
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| <211> 25 | |
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| <213> Artificial Sequence | |
| <220> | |
| <223> Primer | |
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| tggtctttga taatgccttt ctcct | 25 |
| <210> 74 | |
| <211> 25 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Primer | |
| <400> 74 | |
| ctgctgtgaa gaatttgatg aggaa | 25 |
| <210> 75 | |
| <211> 25 | |
| <212> DNA | |
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| <220> | |
| <223> Primer | |
| <400> 75 | |
| cagtgatgaa gaagatgccg agaaa | 25 |
| <210> 76 | |
| <211> 25 | |
| <212> DNA | |
| <213> Artificial Sequence | |
| <220> | |
| <223> Probe | |
| <400> 76 | |
| cgctggcttg cctttgcatc cttta | 25 |
| <210> 77 | |
| <211> 1931 | |
| <212> DNA | |
| <213> Rattus norvegicus | |
| <400> 77 | |
| tcaactgagc catctcctcc ttcttcgact ctcccagctt ctgatgagcc gccgggggtca | 60 |

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|-------------|-------------|------------|-------------|-------------|------------|------|
| cagctaagcg | agcttgagga | gggaccttgc | gggtggagga | acttccaccc | ccagtgtctt | 120 |
| cagcgctgca | acaaccccaa | aggttttctg | cttcactact | gtctcttagc | cctaacgcaa | 180 |
| ggtattgtag | taaatggcct | agtaaatatt | agcatttcca | ccatcgagaa | gcgctatgaa | 240 |
| atgaagagtt | ccctgaccgg | cctgatatac | tcgagctacg | acatctcctt | ttgcgtgttg | 300 |
| tctctgtttg | tgtctttctt | tggtgagaga | ggacacaaac | ctcgctggct | tgcctttgca | 360 |
| tcctttatga | tcggactggg | agcgctgggt | ttttctttac | cacacttctt | cagtgggaga | 420 |
| tatgaactgg | gaaccatttt | cgaagatacc | tgcttaacaa | ggaacagcac | cagatgtgct | 480 |
| tcttcaacct | ctctgctttc | taactacttc | tatgtctttg | tcctggggaca | actgttgctg | 540 |
| gggactggag | gaactccgct | ctacaccctg | ggaacggcct | tcattgatga | ctctgtaccc | 600 |
| acacacaaat | cttctctata | tatcggtatt | ggctattcta | tgtcaatcct | aggcccagcc | 660 |
| attggctatg | tgttgggagg | acagctgttg | acaaatgtaca | ttgatgttgc | tatgggacaa | 720 |
| agttcagatc | tgactgagga | tgatccccgg | tggttggggg | cttgggtggat | tggattcctt | 780 |
| ttagcttggc | tctttgcttg | gtctttgata | atgcctttct | cctgttttcc | aaagcattta | 840 |
| ccaggggacag | caaaaattca | agctggcaaa | acttcccaga | ctcatcaaaa | taatagtact | 900 |
| tcctttccaac | atatggatga | aaattttggg | aaaagtatta | aagattttcc | aactgctgtg | 960 |
| aagaatttga | tgaggaaatac | agtctttata | tgttttagttc | tatcaactac | ttctgaagca | 1020 |
| ctagttacca | cgggatttgc | cacgttttta | cctaaattta | tagaaaatca | atttggattg | 1080 |
| acatcgagca | ttgcggcaac | acttggaggg | gctgttttaa | ttcctggagc | tgtctttggt | 1140 |
| caaactcttag | gtggtgttct | tgtttcaaaa | ttcaaaatga | agtgtaaaaa | tacaatgaag | 1200 |
| tttgcgttat | gtacatctgg | agtagcactt | atgctgagtt | ttgtatttat | ttatgcaaaa | 1260 |
| tgtgaaaatg | ggccatttgc | tgggtgtgtc | gaatcatata | atggaacagg | agagatgggg | 1320 |
| aactgtactg | caccttgcaa | tgccaattgc | aattgtttga | gatcctatta | ttaccctctc | 1380 |
| tgtggaagtg | atggagttcca | gtatttttct | ccctgctttg | caggttgttt | aaactcagtt | 1440 |
| tcaaacagga | aaccaaaggc | atattataat | tgttcctgta | ttgaaaggaa | agtcgacatc | 1500 |
| acttctactg | cagaaagccc | tgattttgaa | gcaagggtcg | gaaaatgtaa | aactcagtgt | 1560 |
| tcaaacctgc | ccatatttct | cggcatcttc | ttcatcactg | tgatttttac | ctttatggca | 1620 |
| ggtaccccc | taactgtgtc | catattaagg | tgtgtcaatc | acagacagcg | atctctagca | 1680 |
| ctgggagtgc | agttcatgtc | tcttcggttg | ttaggcacga | tacctgggcc | aattataatt | 1740 |
| ggcgctacaa | tagacagcac | gtgtgttctg | tgggacatca | atgaatgtgg | aacaaagggg | 1800 |
| gcgtgttggg | tctatgataa | catcaggatg | gcgcatatgc | tgggtggctat | aagtgttact | 1860 |
| tgtaaagtca | tcaccatatt | cttcaatgga | cttgcgatag | ttctctataa | accaccgccc | 1920 |
| ccaggaacgg | a | | | | | 1931 |

<210> 78
 <211> 484
 <212> DNA
 <213> Rattus norvegicus

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| cagacacccc | acgccgtgcg | tctgcgtcgc | cttcccagg | ggaggtctct | gctgtggcct | 120 |
| ccaggaatca | gaatgggggt | tcgcaacctc | gggaatctga | agatccccag | aagtcaactg | 180 |
| agccatctcc | tccttcttcg | actctccag | cttctgatga | gccgccgggg | tcacagctaa | 240 |
| gcgagcttga | ggagggacct | tgcgggtgga | ggaacttcca | ccccagtg | cttcagcgct | 300 |
| gcaacaaccc | caaagggttt | ctgcttcact | actgtctctt | agccctaacg | caagggtattg | 360 |
| tagtaaatgg | cctagtaaat | attagcattt | ccaccatcga | gaagcgctat | gaaatgaaga | 420 |
| gttccctgac | cggcctgata | tcatcgagct | acgacatctc | cttttgcgtg | ttgtctctgt | 480 |
| ttgt | | | | | | 484 |

<210> 79
 <211> 704
 <212> DNA
 <213> Rattus norvegicus

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| tgtttaaact | cagtttcaaa | caggaaacca | aaggcatatt | ataattgttc | ctgtattgaa | 120 |
| aggaaagtgc | acatcacttc | tactgcagaa | agccctgatt | ttgaagcaag | ggctggaaaa | 180 |
| tgtaaaactc | agtgttcaaa | ctgtcccata | tttctcgga | tcttcttcat | cactgtgatt | 240 |
| tttaccttta | tggcagggtac | ccccataact | gtgtccatat | taagggtgtg | caatcacaga | 300 |
| cagcgatctc | tagcactggg | agtgcagttc | atgcttcttc | gggtgttagg | cacgatacct | 360 |
| gggccaatta | tatttggcgt | cacaatagac | agcacgtgtg | ttctgtggga | catcaatgaa | 420 |
| tgtggaacaa | agggggcggtg | ttggatctat | gataacatca | ggatggcgca | tatgtctgtg | 480 |
| gctataagtg | ttacttgtaa | agtcatacacc | atattcttca | atggacttgc | gatagttctc | 540 |

| | | | | | | |
|------------|------------|------------|------------|------------|------------|-----|
| tataaaccac | cgcccccagg | aacggaggta | tcatttcaaa | gtcagaatgt | agttgtgtcg | 600 |
| acgattacag | tggaggagga | cctcaacaaa | atagagaacg | aaggatgaga | aagaagagga | 660 |
| tactgcttta | gaaaagtggc | tccttcctgt | cagaacaaac | tgtg | | 704 |

<210> 80
 <211> 2175
 <212> DNA
 <213> Rattus norvegicus

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| atgcagggtt | ccaagggagt | cgagaacccg | gcatttcgtcc | cttccagccc | agacacccca | 60 |
| cgccgtgcgt | ctgcgtcgcc | ttcccagggtg | gaggtctctg | ctgtggcctc | caggaatcag | 120 |
| aatgggggtt | cgcaacctcg | ggaatctgaa | gatccccaga | agtcaactga | gccatctcct | 180 |
| ccttcttcga | ctctcccagc | ttctgatgag | ccgccgggggt | cacagctaag | cgagcttgag | 240 |
| gagggacctt | gcgggtggag | gaacttccac | ccccagtgct | ttcagcgctg | caacaacccc | 300 |
| aaaggttttc | tgcttacta | ctgtctctta | gccctaacgc | aaggatttgt | agtaaattggc | 360 |
| ctagtaaata | ttagcatttc | caccatcgag | aagcgctatg | aaatgaagag | ttccctgacc | 420 |
| ggcctgatata | catcgagcta | cgacatctcc | ttttgcgtgt | tgtctctgtt | tgtgtctttc | 480 |
| tttggtgaga | gaggacacaa | acctcgctgg | cttgcccttg | catcctttat | gatcggactg | 540 |
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| ttcgaagata | cctgcttaac | aaggaacagc | accagatgtg | cttcttcaac | ctctctgctt | 660 |
| tctaactact | tctatgtctt | tgctctggga | caactgttgc | tggggactgg | aggaactccg | 720 |
| ctctacaccc | tgggaacggc | cttcattgat | gactctgtac | ccacacacaa | atcttctcta | 780 |
| tatatcggtta | ttggctattc | tatgtcaatc | ctaggcccag | ccattggcta | tgtgttggga | 840 |
| ggacagctgt | tgacaatgta | cattgatgtt | gctatgggac | aaagttcaga | tctgactgag | 900 |
| gatgatcccc | ggtgggtggg | ggcttgggtg | attggattcc | ttttagcttg | gctctttgct | 960 |
| tggcttttga | taatgccttt | ctcctgtttt | ccaaagcatt | taccagggac | agcaaaaatt | 1020 |
| caagctggca | aaacttccca | gactcatcaa | aataatagta | cttccttcca | acatatggat | 1080 |
| gaaaattttg | ggaaaagtat | taaagatttt | ccaactgctg | tgaagaattt | gatgaggaat | 1140 |
| acagtcttta | tatgttttagt | tctatcaact | acttctgaag | cactagttac | cacgggattt | 1200 |
| gccacgtttt | tacctaaatt | tatagaaaat | caatttggat | tgacatcgag | cattgcggca | 1260 |
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| cttgtttcaa | aattcaaaaat | gaagtgtaaa | aatacaatga | agtttgcgtt | atgtacatct | 1380 |
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| cagtattttt | ctccctgctt | tgcaggttgt | ttaaactcag | tttcaaacag | gaaaccaaag | 1620 |
| gcatattata | attgttcctg | tattgaaagg | aaagtcgaca | tcacttctac | tgcagaaagc | 1680 |
| cctgattttg | aagcaagggc | tggaaaatgt | aaaactcagt | gttcaaacct | gccccatttt | 1740 |
| ctcggcatct | tcttcatcac | tgtgattttt | acctttatgg | caggtacccc | cataactgtg | 1800 |
| tccatattaa | ggtgtgtcaa | tcacagacag | cgatctctag | cactgggagt | gcagttcatg | 1860 |
| cttcttcggg | tggttaggcac | gatacctggg | ccaattatat | ttggcgtcac | aatagacagc | 1920 |
| acgtgtgttc | tgtgggacat | caatgaatgt | ggaacaaagg | gggcgtgttg | gatctatgat | 1980 |
| aacatcagga | tggcgcatat | gctggtggct | ataagtgtta | cttgtaaagt | catcaccata | 2040 |
| ttcttcaatg | gacttgcgat | agttctctat | aaaccaccgc | ccccaggaac | ggaggtatca | 2100 |
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| cgccgtgcgt | ctgcgtcgcc | ttcccagggtg | gaggtctctg | ctgtggcctc | caggaatcag | 120 |
| aatgggggtt | cgcaacctcg | ggattctgaa | gatccccaga | agtcaactga | gccatctcct | 180 |
| ccttcttcga | ctctcccagc | ttctgatgag | ccgccgggggt | cacagctaag | agagcttgag | 240 |
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| aaaggttttc | tgcttacta | ctgtctctta | gccctaacgc | aaggatttgt | agtaaattggc | 360 |
| ctagtaaata | ttagcatttc | caccatcgag | aagcgctatg | aaatgaagag | ttccctgacc | 420 |
| ggcctgatata | catcgagcta | cgacatctcc | ttttgcgtgt | tgtctctgtt | tgtgtctttc | 480 |
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| ttcgaagata | cctgcttaac | aaggaacagc | accagatgtg | cttcttcaac | ctctctgctt | 660 |
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| ctctacaccc | tgggaacggc | cttcattgat | gactctgtac | ccacacacaa | atcttctcta | 780 |
| tatatcggtg | ttggctattc | tatgtcaatc | ctaggcccag | ccattggcta | tgtgttggga | 840 |
| ggacagctgt | tgacaatgta | cattgatgtt | gctatggggc | aaagttcaga | tctgactgag | 900 |
| gatgatcccc | ggtggttggg | ggcttgggtg | attggattcc | ttttagcttg | gctctttgct | 960 |
| tggcttttga | taatgccttt | ctcctgtttt | ccaaagcatt | taccagggac | agcaaaaatt | 1020 |
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| gccacgtttt | tacctaattt | tatagaaaat | caatttggat | tgacatcgag | ctttgcggca | 1260 |
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| ggagtagcac | ttatgctgag | ttttgtattt | atttatgcaa | aatgtgaaaa | tgggccattt | 1440 |
| gctggtgtgt | ctgaatcata | taatggaaca | ggagagatgg | ggaatctgac | tgcaccttgc | 1500 |
| aatgcccaatt | gcaattgttt | gagatcctat | tattacccgc | tctgtggaag | tgatggagtc | 1560 |
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| cttcttcggg | tgtttaggcac | gatacctggg | ccaattatat | ttggcgtcac | aatagacagc | 1920 |
| acgtgtgttc | tgtgggacat | caatgaatgt | ggaacaaagg | gggcgtgttg | gatctatgat | 1980 |
| aacatcagga | tggcgcatat | gctggtggct | ataagtgtta | cttgtaaagt | catcaccata | 2040 |
| ttcttcaatg | gacttgcgat | agttctctat | aaaccaccgc | cccaggaac | ggaggtatca | 2100 |
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| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Asn | Ser | Ala | Met | Glu | Asn | Gly | Leu | Asp | His | Thr | Pro | Pro | Ser | Arg | Arg |
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| Ala | Ser | Pro | Gly | Thr | Pro | Leu | Ser | Pro | Gly | Ser | Leu | Arg | Ser | Ala | Ala |
| | | | 35 | | | | 40 | | | | | 45 | | | |
| His | Ser | Pro | Leu | Asp | Thr | Ser | Lys | Gln | Pro | Leu | Cys | Gln | Leu | Trp | Ala |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Glu | Lys | His | Gly | Ala | Arg | Gly | Thr | His | Glu | Val | Arg | Tyr | Val | Ser | Ala |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Gly | Gln | Ser | Val | Ala | Cys | Gly | Trp | Trp | Ala | Phe | Ala | Pro | Pro | Cys | Leu |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Gln | Val | Leu | Asn | Thr | Pro | Lys | Gly | Ile | Leu | Phe | Phe | Leu | Cys | Ala | Ala |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Ala | Phe | Leu | Gln | Gly | Met | Thr | Val | Asn | Gly | Phe | Ile | Asn | Thr | Val | Ile |
| | | | 115 | | | | 120 | | | | | 125 | | | |
| Thr | Ser | Leu | Glu | Arg | Arg | Tyr | Asp | Leu | His | Ser | Tyr | Gln | Ser | Gly | Leu |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Ile | Ala | Ser | Ser | Tyr | Asp | Ile | Ala | Ala | Cys | Leu | Cys | Leu | Thr | Phe | Val |
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| Ser | Tyr | Phe | Gly | Gly | Ser | Gly | His | Lys | Pro | Arg | Trp | Leu | Gly | Trp | Gly |
| | | | 165 | | | | | | 170 | | | | | 175 | |
| Val | Leu | Leu | Met | Gly | Thr | Gly | Ser | Leu | Val | Phe | Ala | Leu | Pro | His | Phe |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Thr | Ala | Gly | Arg | Tyr | Glu | Val | Glu | Leu | Asp | Ala | Gly | Val | Arg | Thr | Cys |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Pro | Ala | Asn | Pro | Gly | Ala | Val | Cys | Ala | Asp | Ser | Thr | Ser | Gly | Leu | Ser |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Arg | Tyr | Gln | Leu | Val | Phe | Met | Leu | Gly | Gln | Phe | Leu | His | Gly | Val | Gly |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 |
| Ala | Thr | Pro | Leu | Tyr | Thr | Leu | Gly | Val | Thr | Tyr | Leu | Asp | Glu | Asn | Val |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| Lys | Ser | Ser | Cys | Ser | Pro | Val | Tyr | Ile | Ala | Ile | Phe | Tyr | Thr | Ala | Ala |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Ile | Leu | Gly | Pro | Ala | Ala | Gly | Tyr | Leu | Ile | Gly | Gly | Ala | Leu | Leu | Asn |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Ile | Tyr | Thr | Glu | Met | Gly | Arg | Thr | Glu | Leu | Thr | Thr | Glu | Ser | Pro | |
| | 290 | | | | | 295 | | | | | 300 | | | | |
| Leu | Trp | Val | Gly | Ala | Trp | Trp | Val | Gly | Phe | Leu | Gly | Ser | Gly | Ala | Ala |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| Ala | Phe | Phe | Thr | Ala | Val | Pro | Ile | Leu | Gly | Tyr | Pro | Arg | Gln | Leu | Pro |
| | | | 325 | | | | | | 330 | | | | | 335 | |
| Gly | Ser | Gln | Arg | Tyr | Ala | Val | Met | Arg | Ala | Ala | Glu | Met | His | Gln | Leu |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Lys | Asp | Ser | Ser | Arg | Gly | Glu | Ala | Ser | Asn | Pro | Asp | Phe | Gly | Lys | Thr |
| | | 355 | | | | | 360 | | | | | 365 | | | |
| Ile | Arg | Asp | Leu | Pro | Leu | Ser | Ile | Trp | Leu | Leu | Leu | Lys | Asn | Pro | Thr |
| | 370 | | | | | 375 | | | | | 380 | | | | |
| Phe | Ile | Leu | Leu | Cys | Leu | Ala | Gly | Ala | Thr | Glu | Ala | Thr | Leu | Ile | Thr |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 |
| Gly | Met | Ser | Thr | Phe | Ser | Pro | Lys | Phe | Leu | Glu | Ser | Gln | Phe | Ser | Leu |
| | | | 405 | | | | | | 410 | | | | | 415 | |
| Ser | Ala | Ser | Glu | Ala | Ala | Thr | Leu | Phe | Gly | Tyr | Leu | Val | Val | Pro | Ala |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Gly | Gly | Gly | Gly | Thr | Phe | Leu | Gly | Gly | Phe | Phe | Val | Asn | Lys | Leu | Arg |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Leu | Arg | Gly | Ser | Ala | Val | Ile | Lys | Phe | Cys | Leu | Phe | Cys | Thr | Val | Val |
| | 450 | | | | | 455 | | | | | 460 | | | | |
| Ser | Leu | Leu | Gly | Ile | Leu | Val | Phe | Ser | Leu | His | Cys | Pro | Ser | Val | Pro |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Ala | Gly | Val | Thr | Ala | Ser | Tyr | Gly | Gly | Ser | Leu | Leu | Pro | Glu | Gly |
| | | | | 485 | | | | | 490 | | | | | 495 | |
| His | Leu | Asn | Leu | Thr | Ala | Pro | Cys | Asn | Ala | Ala | Cys | Ser | Cys | Gln | Pro |
| | | | 500 | | | | | 505 | | | | | 510 | | |
| Glu | His | Tyr | Ser | Pro | Val | Cys | Gly | Ser | Asp | Gly | Leu | Met | Tyr | Phe | Ser |
| | | 515 | | | | | 520 | | | | | 525 | | | |
| Leu | Cys | His | Ala | Gly | Cys | Pro | Ala | Ala | Thr | Glu | Thr | Asn | Val | Asp | Gly |
| | 530 | | | | | 535 | | | | | 540 | | | | |
| Gln | Lys | Val | Tyr | Arg | Asp | Cys | Ser | Cys | Ile | Pro | Gln | Asn | Leu | Ser | Ser |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Gly | Phe | Gly | His | Ala | Thr | Ala | Gly | Lys | Cys | Thr | Ser | Thr | Cys | Gln | Arg |
| | | | 565 | | | | | | 570 | | | | | 575 | |
| Lys | Pro | Leu | Leu | Leu | Val | Phe | Ile | Phe | Val | Val | Ile | Phe | Phe | Thr | Phe |
| | | | 580 | | | | | 585 | | | | | 590 | | |
| Leu | Ser | Ser | Ile | Pro | Ala | Leu | Thr | Ala | Thr | Leu | Arg | Cys | Val | Arg | Asp |
| | | 595 | | | | | 600 | | | | | 605 | | | |
| Pro | Gln | Arg | Ser | Phe | Ala | Leu | Gly | Ile | Gln | Trp | Ile | Val | Val | Arg | Ile |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Leu | Gly | Gly | Ile | Pro | Gly | Pro | Ile | Ala | Phe | Gly | Trp | Val | Ile | Asp | Lys |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 |
| Ala | Cys | Leu | Leu | Trp | Gln | Asp | Gln | Cys | Gly | Gln | Gln | Gly | Ser | Cys | Leu |
| | | | | 645 | | | | | 650 | | | | | 655 | |
| Val | Tyr | Gln | Asn | Ser | Ala | Met | Ser | Arg | Tyr | Ile | Leu | Ile | Met | Gly | Leu |
| | | | 660 | | | | | 665 | | | | | 670 | | |
| Leu | Tyr | Lys | Val | Leu | Gly | Val | Leu | Phe | Phe | Ala | Ile | Ala | Cys | Phe | Leu |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Tyr | Lys | Pro | Leu | Ser | Glu | Ser | Ser | Asp | Gly | Leu | Glu | Thr | Cys | Leu | Pro |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Ser | Gln | Ser | Ser | Ala | Pro | Asp | Ser | Ala | Thr | Asp | Ser | Gln | Leu | Gln | Ser |
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<400> 86

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| Ala | Pro | Ala | Thr | Ala | Glu | Ala | Val | Gln | Glu | Arg | Cys | Glu | Pro | Glu | Thr |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Leu | Arg | Ser | Lys | Ser | Leu | Pro | Val | Leu | Ser | Ser | Ala | Ser | Cys | Arg | Pro |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Ser | Leu | Ser | Pro | Thr | Ser | Gly | Asp | Ala | Asn | Pro | Ala | Phe | Gly | Cys | Val |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Asp | Ser | Ser | Gly | His | Gln | Glu | Leu | Lys | Gln | Gly | Pro | Asn | Pro | Leu | Ala |
| 65 | | | | 70 | | | | | 75 | | | | | 80 | |
| Pro | Ser | Pro | Ser | Ala | Pro | Ser | Thr | Ser | Ala | Gly | Leu | Gly | Asp | Cys | Asn |
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| His | Arg | Val | Asp | Leu | Ser | Lys | Thr | Phe | Ser | Val | Ser | Ser | Ala | Leu | Ala |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Met | Leu | Gln | Glu | Arg | Arg | Cys | Leu | Tyr | Val | Val | Leu | Thr | Asp | Ser | Arg |
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| Cys | Phe | Leu | Val | Cys | Met | Cys | Phe | Leu | Thr | Phe | Ile | Gln | Ala | Leu | Met |
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| Val | Ser | Gly | Tyr | Leu | Ser | Ser | Val | Ile | Thr | Thr | Ile | Glu | Arg | Arg | Tyr |
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| Ser | Leu | Lys | Ser | Ser | Glu | Ser | Gly | Leu | Leu | Val | Ser | Cys | Phe | Asp | Ile |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Gly | Asn | Leu | Val | Val | Val | Val | Phe | Val | Ser | Tyr | Phe | Gly | Gly | Arg | Gly |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Arg | Arg | Pro | Leu | Trp | Leu | Ala | Val | Gly | Gly | Leu | Leu | Ile | Ala | Phe | Gly |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Gly | val | Gln | Gly | Ser | Cys | Trp | Glu | Tyr | Asn | Val | Thr | Ser | Phe | Arg | Phe |
| | | | | 725 | | | | | 730 | | | | | 735 | |
| val | Tyr | Phe | Gly | Leu | Ala | Ala | Gly | Leu | Lys | Phe | Val | Gly | Phe | Ile | Phe |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Ile | Phe | Leu | Ala | Trp | Tyr | Ser | Ile | Lys | Tyr | Lys | Glu | Asp | Gly | Leu | Gln |
| | | 755 | | | | | 760 | | | | | 765 | | | |
| Arg | Arg | Arg | Gln | Arg | Glu | Phe | Pro | Leu | Ser | Thr | Val | Ser | Glu | Arg | Val |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Gly | His | Pro | Asp | Asn | Ala | Arg | Thr | Arg | Ser | Cys | Pro | Ala | Phe | Ser | Thr |
| | 785 | | | | 790 | | | | | 795 | | | | | 800 |
| Gln | Gly | Glu | Phe | His | Glu | Glu | Thr | Gly | Leu | Gln | Lys | Gly | Ile | Gln | Cys |
| | | | | 805 | | | | | 810 | | | | | 815 | |
| Ala | Ala | Gln | Thr | Tyr | Pro | Gly | Pro | Phe | Pro | Glu | Ala | Ile | Ser | Ser | Ser |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| Ala | Asp | Pro | Gly | Leu | Glu | Glu | Ser | Pro | Ala | Ala | Leu | Glu | Pro | Pro | Ser |
| | | 835 | | | | | 840 | | | | | 845 | | | |